

APPENDIX 8.14A

## Stormwater Calculations

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## BURNS AND ROE ENTERPRISES, INC.

W.O. No: 2731 Calc. 5-23-06 Sheet No: 1 Cont'd on 2  
Prepared By: DM Date: 5-23-06 Checked By: DM Date: 5-23-06  
Title: VERNON POWER PLANT - DETENTION BASIN STORAGE CAPACITY

DETERMINE REQUIRED DETENTION BASIN STORAGE CAPACITY

50-YR 24-HR RAINFALL DEPTH = 5.6 IN

CONVERT 50-YR STORM TO 10-YR DESIGN STORM

$$10\text{-YR STORM} = 5.6 \text{ IN} (.714) = 4 \text{ IN}$$

$$\text{TOTAL PLANT AREA} = 13.68 \text{ AC} = 595,901 \text{ SF}$$

$$\begin{aligned} \text{CONTAINMENT AREAS} &= 54925 \text{ SF} \quad (\text{DOES NOT DRAIN TO BASIN}) \\ \text{PAVED AREAS} &= 280,080 \text{ SF} \\ \text{CRUSHED STONE AREAS} &= 260,976 \text{ SF} > 540,976 \text{ SF} \end{aligned}$$

REF:  
EIM, EMAIL  
DATED  
2/15/06

REF:  
LACDPW  
HYD MANUAL  
PB 4

CALCULATE AVERAGE RUNOFF COEFFICIENT - "C"

$$\text{Avg "C"} = \frac{280,080}{540,976} (.95) + \frac{260,976}{540,976} (.70) = 0.83$$

"C" FOR PAVED  
AREA

"C" FOR PERVIOUS  
STONE

$$\begin{aligned} \text{REQ'D BASIN STORAGE CAPACITY} &= 540,976 \text{ SF} \left( \frac{4 \text{ IN}}{12 \text{ IN}} \right) (.83) \\ &= \underline{149,670 \text{ CF}} \end{aligned}$$

ASSUMING A BASIN STORAGE DEPTH OF 6 1/2 FT WITH  
1V:2H SIDE SLOPES, TRY BASIN SIZE OF  
400' x 75' (INCLUDE 1 FOOT FREEBOARD ABOVE STORAGE)

$$\begin{aligned} \text{STORAGE CAPACITY} &= (400 - 2(6.5))(75 - (2)(6.5)) (6.5) \\ &\quad (\text{AVG BASIN AREA}) \\ &= 155,961 \text{ SF} > 149,670 \text{ CF} \text{ OK} \end{aligned}$$

From: "Maximous, Ehab" <EMaximous@ci.vernon.ca.us>  
To: "Dennis Morrissey" <dmorrissey@roe.com>  
Date: 2/15/2006 5:53:18 PM  
Subject: RE: LA County DPW Info

approx. 5.6in.

Asbuilts are in the mail and should be on the way. We found two storm drain sheets for the RCP along Seville and Soto.

-----Original Message-----

From: Dennis Morrissey [mailto:dmorrissey@roe.com]  
Sent: Wednesday, February 15, 2006 12:51 PM  
To: Maximous, Ehab  
Subject: Re: LA County DPW Info

Max,

I have downloaded the Hydrology Manual and Addendum, but have been unable to view or download the associated 50-year 24-hour Rainfall Isohyetal Maps. Do you know what the 50-year 24-hour rainfall depth is in the vicinity of the Vernon Power Plant?

Also, were you able to send the storm drain asbuilts?

Thanks for your help,

Dennis

Dennis Morrissey, PE  
Principal Engineer  
Burns and Roe Enterprises, Inc  
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>>> "Maximous, Ehab" <EMaximous@ci.vernon.ca.us> 02/02/06 1:04 PM >>>

As we discussed, please see the attached. Also, here is the website for the County of Los Angeles Department of Public Works:  
<http://www.ladpw.com/wrd/publication/index.cfm> The Hydrology Manual can be downloaded here.

I'll be mailing you out some storm drain asbuilts today.  
Let me know if you need any additional help.


Max

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E. MAXIMOUS (MAX), PE | CIVIL ENGINEER<?xml:namespace prefix = o ns = "urn:schemas-microsoft-com:office:office" />

CITY OF VERNON | COMMUNITY SERVICES AND WATER DEPARTMENT

4305 SANTA FE AVE. | VERNON, CA 90058

Isohyetal maps for the 50-year 24-hour rainfall depth in inches have been generated using a geographic information system (GIS). The isohyetal maps are at intervals of two tenths of an inch and are included in Appendix C of this addendum. Frequency reduction factors have been developed to calculate 10-year and 25-year 24-hour rainfall depths from the 50-year 24-hour rainfall depths. The frequency reduction factors are as follow:



Rainfall Depth	Frequency Factor
10-year 24-hour	0.714
25-year 24-hour	0.878
50-year 24 hour	1.000

Using the isohyetal maps and the appropriate frequency reduction factor, a mean basin rainfall depth in inches can be determined for each subarea in the watershed. By using the dimensionless mass curve found in Appendix B and the mean subarea rainfall depth, the temporal distribution of the rainfall is determined.

#### **4. Isohyetal Method:**

Isohyetal maps indicating the spatial variability of rainfall over Los Angeles County have been created. These maps are shown in Appendix C. This more precisely defined rainfall distribution reasonably represents the average rainfall over the watershed and its subareas.

The following procedures can be used to compute the average rainfall within a watershed subarea:

The area between successive isohyetal lines is computed and multiplied by the numerical average of the two contour (isohyet) values. The sum of the computed values described above divided by the drainage area or subarea area provides the weighted average rainfall depth. The average rainfall should be calculated to the nearest printed isohyet for every subarea.